



Volume 3 No. 3
ISSUE No. 9

August 2008



- ▶ 2-4 ICHARM activities to solve water-related problems
- ▶ 5 Research reports at international conferences
- ▶ 6 Introduction to an ICHARM research project
ICHARM open event
- ▶ 7 ICHARM R&D Seminars
- ▶ 8 Comprehensive Tsunami Disaster Prevention Training Course
- ▶ 9 Adaptation to global warming
- ▶ 10 ICHARM publication list

ICHARM

Newsletter

INTERNATIONAL CENTRE FOR WATER HAZARD AND RISK MANAGEMENT
under the auspices of UNESCO

Message from the Director



The 4th International Symposium on Flood Defence (ISFD4) was held in Toronto, Canada during 6-8 May 2008. It was a unique symposium focusing solely on floods. About 250 people gathered from a number of countries especially from USA, Canada and the Netherlands. Many presentations were given by practicing engineers and administrators of local flood management offices. It was a great occasion where practitioners of different nations discussed about their everyday problems and experiences. During the Symposium, ICHARM was requested to host the next meeting in Japan. Considering this unique and valuable nature of the meeting, ICHARM has decided to take the honor of hosting the 5th International Conference on Flood Management (ICFM5) in Japan in 2011. Note that the name of the meeting was changed from "International Symposium on Flood Defence" to "International Conference on Flood Management" to broaden the scope. We are pleased to include the pre-announcement of the Conference in this issue below. We sincerely ask your cooperation for the success of the next Conference.

During 19-23 May 2008 another unique international conference was held on Ecohydrological Processes and Sustainable Floodplain Management at our sister institute, the European Regional Centre for Ecohydrology (ERCE) under the auspices

of UNESCO in Lodz (pronounced "Woodge"), Poland. The conference brought together more than 100 hydro-ecologists, hydrologists, geo-morphologists, river engineers, etc. Hydro-ecology is considered as a tool for Integrated Water Resources Management and for sustainable floodplain management. ICHARM likes to support such direction.

The 18th session of the UNESCO International Hydrological Program (IHP) Inter-Governmental Council was held in Paris during 9-13 May 2008. The Council welcomed the proposals of Turkey, Brazil, Portugal, Dominica, USA, Germany and Kazakhstan to establish UNESCO Category II Water Centres. ICHARM wishes that the new centres will soon be established and start working. We are especially keen to work with the International Centre for Integrated Water Resources Management (ICIWaRM) hosted by Water Resource Institute of US Army Corps of Engineers, with whom we have already an MOU signed.

Another good news in this Council was that ICHARM exchanged MOUs with two very important UNESCO water centers: UNESCO-IHE and Regional Centre for Urban Water Management (RCUWM), Teheran for better collaboration. With UNESCO-IHE Director Prof. Richard Meganck and then with RCUWM Director Farhad Yazdandoost, I exchanged signatures of MOUs. We have already various collaborative activities started or planned.

Finally, I am very happy to report that professors of ICHARM Master Course on water-related disaster management policy are now busy reviewing the drafts of the master theses for all ten students to finally submit their theses to National Graduate Institute for Policy Studies (GRIPS) late August. With those hard working students, ICHARM members are working hard despite hot and humid weather of Tsukuba.

Kuniyoshi Takeuchi
Director, ICHARM

ICHARM activities to solve water-related problems

18th UNESCO-IHP Intergovernmental Council Held

The 18th Intergovernmental Council of the [UNESCO International Hydrological Programme \(UNESCO-IHP\)](#) was held at the UNESCO Headquarters on June 9-13. Thirty-six council member countries including Japan participated in the meeting along with 41 non-council members (observers) and 23 international organizations. The council meets biennially to report and discuss IHP activities, future strategies, collaboration with other international or non-governmental organizations, and other important issues. Director Kuniyoshi Takeuchi, also a member of the Japan National Committee for UNESCO and Deputy Director Akira Terakawa took part in the Japan delegation from ICHARM.

In this 18th meeting, the council adopted the implementation of the Seventh Phase of IHP Strategic Plan (2008-13). Also, seven countries – namely Turkey, Brazil, Kazakhstan, the Dominican Republic, the United States of America, Germany and Portugal – proposed the establishment of new UNESCO water-related centres. The council decided to endorse the proposed centres and adopted a resolution to proceed with preparation for the approval at the UNESCO General Conference.

Additionally, during the lunch break after the first day's morning session, a signing ceremony was held for the MOUs of mutual collaboration between [UNESCO-IHE](#) and ICHARM and between [RCUWM](#) and ICHARM in front of the council participants. With the MOUs signed, mutual collaboration will be promoted, including the exchange of lecturers for training courses, planning and implementation of joint research projects, and other areas.



Council meeting in session (at UNESCO HQs)



Dr. Meganck, Rector of UNESCO-IHE (right) and Dr. Takeuchi, Director of ICHARM, shake hands after signing the MOU. Behind them is Dr. Szöllosi-Nagy, Director of Water Science Division, UNESCO.

The second International Flood Initiative Advisory/Management Committee Meeting Held

The second [IFI](#) Advisory/Management Committee (AC/MC) was held on 5th May at the Institute of Catastrophic Loss Reduction (ICLR) in Toronto, Canada. From ICHARM, Director Kuniyoshi Takeuchi, Chief Researcher Katsuhito Miyake and Research Specialist Ali Chavoshian participated in this meeting. The IFI was launched in 2005 in order to realize coordinated activities among relevant international organizations in pursuing integrated flood management. The key IFI members are UNESCO, WMO, UN/ISDR, UN University, IAHS and IAHR. ICHARM is providing a secretariat function to this important initiative.



IFI meeting at ICLR (Toronto)

The participating organizations are determined to promote activities in four important areas, namely research, education and training, information networking and technical cooperation.

For more information please see the IFI link: <http://www.ifi-home.info>

ICHARM's commitments to World Water Development Report

ICHARM together with other partners works closely with World Water Assessment Programme (WWAP) on drafting the World Water Development Report 3 (WWDR3) "Water in a Changing World". During the last week of April, over 80 writers, contributors, chapter coordinators, members of UN-Water, and the Technical Advisory Group for the WWDR3 from 26 countries met to discuss the state of the world's freshwater resources at the new WWAP headquarters in the Villa La Colombella in Perugia, Italy, where Adikari represented ICHARM. An important step in the development of the WWDR3, the meeting brought experts from around the world to discuss draft final chapters and a set of messages for the world's decision and policy makers responsible for governing water resources.

The Minister for the Environment and Sustainable Development of the Umbria Region (Italy), Assessore Lamberto Bottini welcomed the participants and were also greeted and welcomed to the week of discussion and working sessions on the third report by Mr. Olcay Ünver, Coordinator of WWAP and Dr. András Szöllösi-Nagy, Director of the Division of Water and Secretary of the International Hydrological Programme of UNESCO. The report presents a new approach to monitoring and reporting on water issues, which are vital to meeting global development goals of access to clean water and better sanitation for the world's poor. Developed through a more participatory process which includes inputs from hundreds of experts around the world and public comments, the report will take a more holistic approach to freshwater monitoring and reporting. The recommendations and messages discussed during the meeting will be a vital part of deciding how the world can better manage this important global resource. The WWDR3 will be launched during the opening day of the 5th World Water Forum to be held in Istanbul in March 2009.

For more information please see WWAP link: <http://www.unesco.org/water/wwap/news/index.shtml#wwdr3>



The participants of the WWDR3 integration meeting at WWAP HQ in Perugia, Italy (April 2008) UNESCO- M. Ravassard

ICHARM researchers sent to help flood mapping manual development

ICHARM Chief Researcher Katsuhito Miyake and Research Specialist Rabindra Osti were dispatched to a consultation meeting held at the headquarters of the World Meteorological Organization in Geneva on April 24-26. The meeting was organized by WMO's Associated Programme for Flood Management to develop a flood mapping manual. ICHARM has been working on flood hazard mapping for developing countries through a multidisciplinary approach, and therefore sent the two researchers to the meeting to contribute the experience and knowledge in the field to the international community.



Presentation by Research Specialist Rabindra Osti (center)

Pre-announcement of the 5th International Conference on Flood Management (ICFM5)

The 5th International Conference on Flood Management (ICFM5) will be held in Japan in 2011. The ICFM5 will be hosted by the International Centre for Water Hazard and Risk Management (ICHARM) under the auspices of UNESCO, supported by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) of Japan.

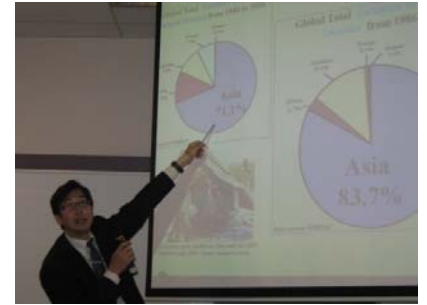
The ICFM5 is the subsequent of the past four successful International Symposiums on Flood Defence (ISFD). The first one was held in Kassel, Germany in September 2000. The 2nd ISFD was held in Beijing, China in September 2002, followed by the 3rd ISFD in Nijmegen, Netherland in May 2005. The ISFD4 was held in Toronto, Canada in May 2008.

The International Conference on Flood Management (ICFM) is the new title of the International Symposiums on Flood Defence (ISFD). This is the only international conference fully focused on flood issues so far, and it is the best place to share your research result, experiences and achievements in flood management with other researchers, engineers and policy makers.

Launch of Asia-Pacific Water Forum Knowledge Hubs

ICHARM Chief Researcher Katsuhito Miyake attended the launch of [regional knowledge hubs \(KHs\)](#) convened on 26 June at the Public Utility Board in Singapore. During the Asia-Pacific Water Summit held in December 2007 in Beppu City, Japan, it was declared that KHs be established in order to contribute to meeting various needs in the water sector. Following this declaration and after the selection from candidate KHs, it was finally decided that 12 KHs will be established under the framework of the Asia-Pacific Water Forum. ICHARM was assigned as KH for disaster risk reduction and flood management.

ICHARM, together with its colleague KHs, is now expected to further contribute to solving various water-related problems in the Asia-Pacific region by deepening the level of collaboration with related agencies, such as Asian Development Bank.



Presentation on the role of ICHARM as KH by Chief Researcher Miyake

Regional Consultation Meeting on Water-related Disaster Management

ICHARM Chief Researchers Katsuhito Miyake and Kazuhiko Fukami participated in a regional consultation meeting on water-related disaster management at the Public Utility Board in Singapore on 27 June. The meeting was held after 12 regional knowledge hubs (KHs), including ICHARM, were newly established. It was a great opportunity for ICHARM to have discussion with invited participants and explore the possibilities of future collaboration. Among the new KHs, ICHARM was one of the only two organizations that were allocated time for such an opportunity. The chief researchers had fruitful discussions with a number of participants from the Asia-Pacific region. In particular, the participants expressed high expectations for ICHARM to extend its support for satellite-based flood forecasting systems and capacity building (training), which the institute has been providing since its establishment.

Additionally, the Asian Development Bank announced that it would launch a new regional technical assistance scheme in collaboration with ICHARM.

ICHARM concludes a memorandum with FCSEC

ICHARM filed a memorandum with the Flood Control and Sabo Engineering Center (FCSEC) in July 21, 2008, to further strengthen the partnership between the two agencies. ICHARM has been exchanging information concerning water-related disaster reduction with FCSEC. The agencies took another step forward to secure closer cooperation.

FCSEC, established under the Department of Public Works and Highway in the Republic of The Philippines, is an organization responsible for the implementation of various projects to develop technical and administrative capabilities against flood and sediment-related disasters. Japan has been providing financial and personnel help to support the agency.

Under the agreement, ICHARM and FCSEC will cooperate with each other in research, training, symposiums, information networking, and personnel exchange in the field of water-related disasters.

ICHARM researcher joins a survey team to help Vietnam become disaster-resilient

ICHARM dispatched Senior Researcher Noro for a preliminary survey for a disaster mitigation project in central Vietnam. The survey was conducted for two weeks from June 24 to July 7, 2008.

The project is organized by JICA to develop the country's organizational capacities for community-centered disaster management. It will be first carried out in the provinces of Thua Thien Hue and Quang Nam, implementing different countermeasures for floods, sediment-related disasters and bank erosion during the next three years.

The Vietnamese government formulated the "National Strategy for Natural Disaster Prevention, Response and Mitigation to 2020" in 2007 with a special focus on the implementation of countermeasures for water-related disasters to support their soaring economic growth.



Bank erosion (Quang Nam)



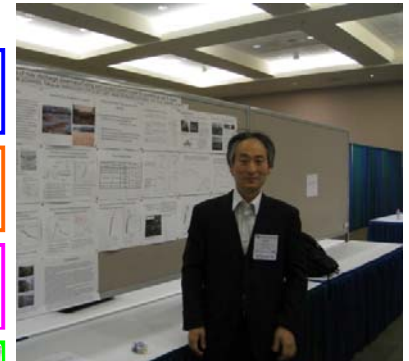
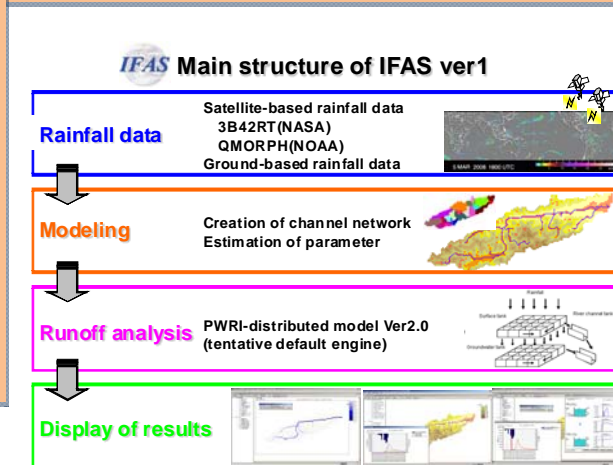
A mansion built at a landslide-disaster site (Thua Thien Hue)

Research reports at international conferences

ASCE World Environmental & Water Resources Congress

The World Environmental & Water Resources Congress was held in Honolulu, Hawaii, between the 12th and 16th of May. ICHARM researchers (Team Leader Kazuhiko Fukami, Senior Researcher Sugiura and Research Specialist Yorozuya participated to present their research results in the congress. So far, the United States Geological Survey (USGS), the Public Works Research Institute (PWRI) and the National Institute of Land and Infrastructure Management (NILIM) have conducted joint workshops every year since 1992.

In the congress, for the purposes of presenting the outputs to the public, three oral sessions and a poster presentation were held as the Japan-US Collaboration. In the session of “Water-Related Disasters and Flood Hydrology” (moderated by Mr. Bales of USGS and Fukami), Sugiura reported about the Integrated Flood Alert System (IFAS), which was developed in a joint project with several consultation companies. Also, in the poster session, Fukami and Yorozuya presented techniques related to water discharge measurement.



Mr. Fukami in front of the poster

The 6th annual Mekong Flood Forum

The 6th Annual Mekong Flood Forum was held in Phnom Penh, Cambodia, from 27 to 28 May 2008 and discussed integrated approaches and applicable systems for medium-term flood forecasting and early warning in the Mekong River Basin. There were about 130 forum participants from the National Mekong Committees and line agencies of the Mekong River Commission (MRC) member states (Cambodia, Lao PDR, Thailand and Viet Nam), and dialogue partners (China and Myanmar), and regional and international scientists, experts organizations and communities, and donors.



Director Takeuchi made the keynote address

From ICHARM, Director Kuniyoshi Takeuchi, Hydrologic Team Leader Kazuhiko Fukami, and Research Specialist Jun Magome participated in this forum. Director Takeuchi made a keynote speech entitled “Flood Forecasting for Best Management of Floodplain”. Magome presented the latest research results on “Flood Risk Forecasting for Poorly Gauged Basins in the Mekong River Basin using a Distributed Hydrological Model and a Satellite-derived Precipitation Dataset”. Furthermore, Fukami and Magome introduced ICHARM activities, such as the Integrated Flood Alert System (IFAS), evaluation of satellite precipitation monitoring and estimation methods, and simulation of flood inundation and capacity building activities.

The forum was a great opportunity for The MRC member states and international organizations to share their recent research and development in flood management and water-related disasters, such as planning of the Mekong regional flash-flood guidance and early warning systems and the Flood Asia Network by USAID/OFDA.

The 5th annual meeting of Asia Oceania Geosciences Society (AOGS)

The 5th annual meeting of the Asia Oceania Geosciences Society (AOGS) was held at Busan, Korea, during 16-20 June 2008. Hydrologic Team Leader Kazuhiko Fukami and Research Specialist Jun Magome of ICHARM attended this international conference. As a convener, Fukami organized a special session named “Earth Observations for Integrated Flood Management,” and discussed with participants the importance of earth observations, such as global data, satellite information for decision making to cope with flood-related risks. Magome presented on coupling of satellite observation and a distributed hydrological model. This special session was strongly related to ICHARM’s research topics and very helpful in sharing latest research topics especially with Asian countries and getting useful comments from participants for ICHARM’s future research activities. In addition, other valuable research topics were also discussed with participants in this AOGS 2008 meeting.

Introduction to an ICHARM research project

Development of a water/sediment discharge measurement system

The River Division of the National Institute of Land and Infrastructure Management (NILIM) and the Hydrologic Engineering Research Team of ICHARM have started a joint project associated with water/sediment discharge measurement. In the project, it is necessary to measure 1) water discharge and riverbed shear stress with an ADCP mounted on an un-manned boat, and 2) sediment discharge in terms of quantity and quality. For safe and reliable measurement, the Hydrologic Engineering Team has improved measurement equipment, including 1) a boat (originally developed by NILIM's River Division led by Dr. Kinoshita) and 2) a sediment sampler (originally designed by USGS as TR-2 Bedload Sampler). The field test conducted this past May especially produced a promising result, thanks to Tone River's excellent discharge rate of about six meters per second after an intensive rainfall. The team will continue improving the instruments for safer and better measurement. If there is any question or comment, please contact us suimon@pwri.go.jp



An improved ADCP-mounted radio controlled boat in a field test during flooding

ICHARM open event

ICHARM belatedly celebrated the second anniversary of its establishment and the World Water Day concurrently on April 17, 2008. ICHARM was established on March 6, 2006 as a category II UNESCO Centre and the World Water Day falls on March 22 every year. The celebration was belated due to logistic reasons which compelled ICHARM to hold it to coincide with the Tsukuba Science Week which is an annual event.

The celebration was unique. In addition to the normal 'open day' activities for the public which included poster presentations and explanations, ICHARM invited high school students from two schools in the Tsukuba area - Takezono High School and Namiki High School - for a tailor-made program specially targeted towards high school students. About 45 enthusiastic students and their teachers were presented with a multi-faceted multi-media presentation about climate change, water, environment and water related disasters in English Language by seven researchers led by Research Specialist Ali Chavosian of Iran. The other ICHARM researchers came from Bhutan, Indonesia, Japan, Nepal, Sri Lanka and Vietnam.

ICHARM intends to continue inviting high school and other students in future open day celebrations.



Explanation by Research Specialist Yoganath Adikari



Group photo with the participants

ICHARM R&D Seminars

ICHARM occasionally holds the “ICHARM R&D Seminar” to help ICHARM’s research and development activities. Below are the summaries of the recent two seminars.

Two flood management specialists talk on devastating impacts of large-scale floods

ICHARM invited two flood management specialists to give talks on latest studies on large-scale flood impacts on Japan in the 12th ICHARM R&D Seminar held on July 8, 2008, for researchers at the Public Works Research Institute and the National Institute for Land and Infrastructure Management.

The first lecturer, Prof. So Kazama of Tohoku University, gave a talk on his recent research projecting flood/sediment-disaster damage increase throughout Japan in the year of 2050. He estimated that the annual flood damage would increase by one trillion JPY, based on a numerical simulation using a national-scale hydrodynamic model and a frequency analysis of historical short-term extreme rainfall data. He also identified locations at which their landslide risks had shifted from low or medium to high due to more intensified rainfall.

The second lecturer, Mr. Koji Ikeuchi of the Cabinet Office, gave a talk on projected human and property losses by a large-scale flooding reviewed by the Taskforce on Large-scale Floods of the Central Disaster Management Council. Mr. Ikeuchi acts as secretary of the taskforce and leader of a joint study project between the Cabinet Office and the Ministry of Land, Infrastructure and Transport on this issue. He demonstrated damage projection for the first time in Japan using a newly-developed hydrodynamic flooding simulator combined with a damage estimator for the Tonegawa-Arakawa River Basins located in Tokyo and its vicinity. He reported that the casualty may be up to 6300 people and also pointed out that the present pumping system would be inadequate to drain a huge amount of floodwater when a 1/1000 flood occurs in this region. Mr. Ikeuchi also found that this projection was, unexpectedly, very sensitive to artificial structures and pumping drainage operations. In order to attain adequate projection reliability for public release, he replaced commonly used digital elevation data with Lidar data and incorporated unmapped agricultural drainages. He further developed realistic fuel-supply scenarios for pumping stations in case of flooding. He also showed the high vulnerability of today’s electricity-dependent society based on his survey results by exemplifying hospitals and other facilities which are heavily dependent on electricity but have done little to protect their electric systems and emergency power generators from flooding.

For the outline of the Central Disaster Management Council, visit:
<http://www.bousai.go.jp/1info/pdf/saigaipanf.pdf>



Presentation by Prof. So Kazama of Tohoku University



Mr. Koji Ikeuchi of the Cabinet Office at Q&A session



Lecture by Dr. Yuichi Ono of UN/ISDR (Left)

Major shift in approach on disaster risk reduction

–from response & relief oriented activities to reducing risk and vulnerability for sustainable development–

On occasion of the 13th ICHARM Research and Development seminar on July 10th, 2008; Dr. Yuichi Ono of UN/ISDR was invited to give a lecture to the ICHARM research staff. He spoke on “International Strategy for Disaster Reduction and its activities related to water-related disaster risk reduction” which was attended by ICHARM research staff, some participants from National Institute for Land and Infrastructure Management (NILIM) and Public Works Research Institute (PWRI) as well. Dr. Ono talked about UN efforts to deal with disasters; ISDR, its system and evolution and ISDR activities. During the lecture Dr. Ono stressed that an approach on disaster risk reduction from response & relief focused activities to reducing risk and vulnerability for sustainable development oriented shift is taking place. He also touched on the topics such as climate change, Hyogo Framework for action, International Flood Initiative, UN-Water, World Water Development Report and World Water Forum.

Comprehensive Tsunami Disaster Prevention Training Course



Participants and ICHARM staffs smile for a picture in front of the ICHARM main entrance.

UN/ISDR is currently implementing a two-year project of the “Building Resilience to Tsunamis in the Indian Ocean” funded by the European Union to promote tsunami countermeasures in Indian Ocean countries. In those countries, it is needed to develop human resources who can manage tsunami countermeasures, such as structural measures, early warning systems and local disaster mitigation plans, etc.

Japan has a long experience with tsunami disasters, such as the 1896 Meiji Sanriku Tsunami with a casualty of 22,000, and has been making major efforts to enhance tsunami disaster prevention.

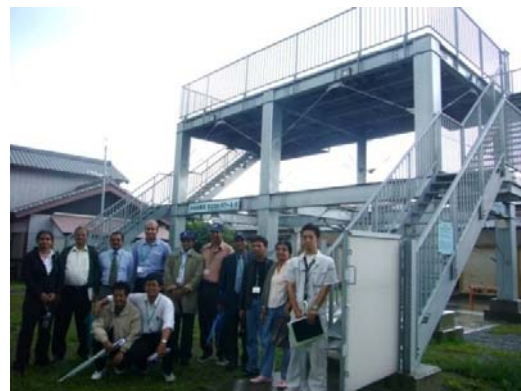
Under the circumstances, ICHARM has conducted the “UN/ISDR Tsunami Disaster Prevention Training Course” as one of the UN/ISDR projects from 2nd June to 11th July with the support of the Japan International Cooperation Agency (JICA) to make good use of Japanese experience of tsunami countermeasures for developing countries. There were 11 course participants from four countries, including India, Indonesia, the Maldives and Sri Lanka. They were section-chief-level government administrators and responsible for promoting tsunami disaster mitigation in their home countries.

During the 1st, 2nd and 4th weeks, the participants mainly had lectures and exercises on tsunamis, coastal vegetation, and other tsunami-related issues. In the 3rd and 5th weeks, to learn tsunami countermeasures and the actual condition of local disaster mitigation in Japan, the participants visited two tsunami-prone areas, the Sanriku coast area and Kii peninsula, and interviewed local municipal personnel and residents. The participants were not only amazed to see gigantic structures, such as tsunami breakwaters and sea walls, but also overwhelmed by local people’s high awareness toward disaster mitigation. In the last week, they made presentations on their action plans, and the training ended successfully.

For a detailed report on the training course, visit [the ICHARM website](#).



Lecture by Prof. Shuto of Nihon University



Temporary evacuation tower in Kushimoto Town

Adaptation to global warming

Japanese Ministry of Land Infrastructure Transport and Tourism's Panel concludes a climate-change adaptation policy report

The Panel on Infrastructure Development concluded a policy report entitled "[Climate Change Adaptation Strategies to Cope with Water-related Disasters due to Global Warming](#)" in June 2008. The panel, consisting of experienced scholars and experts, is one of the advisory bodies under the Minister of Land, Infrastructure, Transport and Tourism. Adaptation strategies to cope with water-related disasters due to global warming were discussed for about a year in the River Sector Committee and the Subcommittee on Climate Change Adaptation for Flood Control. The panel published the report to conclude the discussion.

The policy report contains four chapters: I Common recognition, II Intensifying external forces Impacts on national land and society, III Basic directions of adaptation strategies, and IV Implementation of adaptation measures. The following is a brief summary of the report;

- Neither adaptation nor mitigation alone is sufficient. It is necessary to build "a strong society adapted to water-related disasters (water-disaster adaptation society)," in which sustainable socio-economic activity and livelihood are possible through an appropriate combination of adaptation and mitigation.
- Projections of 100-year precipitation change based on intermediate-level global warming scenarios show that the future precipitation would increase 1.1 to 1.3 times, possibly 1.5 at the maximum. This future precipitation increase may sharply lower the flood safety levels of the present plans, i.e. reducing a current 1/200 level to 1/90-1/145, resulting in higher risks of inundation and flooding.
- It is extremely difficult to completely protect everything from intensified water-related disasters. Therefore, the adaptation goal should be to minimize damage through efforts to achieve "zero victim" in most areas, and to also achieve "avoiding the paralysis of state functions" in economically and politically important areas.
- Social and economical impacts caused by water-related disasters due to climate change should be evaluated as disaster risks to clarify the vulnerabilities of land structures and social systems. Based on the disaster risks, consensus among stakeholders should be built and appropriate adaptation measures should be selected.
- Structures prevent external forces from causing human and property damage, when such forces are within their design capacities, allowing people to continue regular social and economic activities. Therefore, it is important to keep improving structural capacities as much as possible and continue prioritizing the prevention and minimization of damage through structures.
- It is important to build "a water-disaster adaptation society" with primary focus on energy efficiency, urban environment, and the reduction of flood disaster risk in addition to economic efficiency and convenience.
- Mitigation and restoration/rehabilitation measures for large-scale disasters with emphasis on crisis management need to be implemented along with preventive structure/facility construction.
- Adaptation strategies should be promoted mainly around strategic investment in preventive measures, clear prioritization, preparation of road maps, adoption of a flexible approach, cooperation with related organizations, development of new technologies, and contribution to the international community including the Asia-Pacific region.

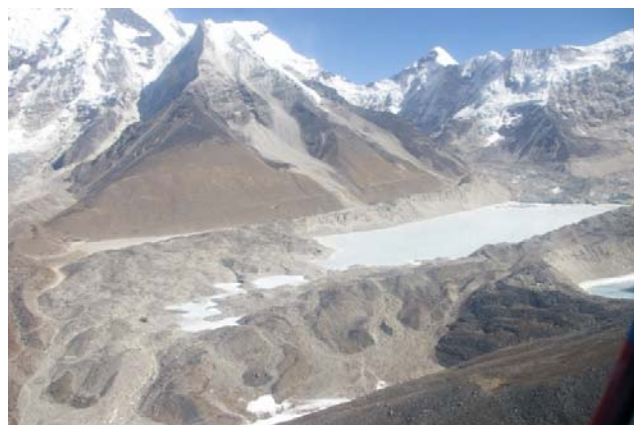
ICHARM supervised the English translation of this report. Although the staff tried hard to translate the meaning of the original Japanese contexts into English during the supervision, the English version is still not necessarily easy to understand. An explanatory guide is scheduled to be published to help understand the report better.

Advanced cases in other countries have strong influences on consensus-oriented policy-making processes and participatory planning with stakeholders. ICHARM welcomes case reports from all over the world describing actual plans or designs which include adaptation strategies to climate change. Send your case report to ICHARM at: icharm@pwri.go.jp

A proposal issued by Science Council of Japan

Subcommittee on Measures against Water-related and Sediment Disasters due to Global Environmental Change, Committee on National Land, Society and Natural Disasters, Science Council of Japan issued a [proposal on "Adaptation to Water-related Disasters due to Global Environmental Change"](#) on 26 June 2008. This proposal was prepared aiming at the G8 Summit in Toyako, Hokkaido, Japan during 7-9 July 2008. The proposal addresses that:

- (1) In addition to mitigation measures, the importance of adaptation should be strongly recognized and promoted to mitigate water-related disasters by global environmental changes.
- (2) In the field of international contribution, i) reduction of death tolls is important through early warning technology, institutional development and capacity development and ii) the principle should be promoted that all the development assistance should include the component of disaster risk assessment.



Imja Tsho of Nepal
(photo by ICHARM in February 2008)

ICHARM publication list

The following is a list of peer-reviewed papers written by ICHARM researchers in the past 3 years .
If you need information about the contents, please ask the authors directly.
Contact icharm@pwri.go.jp, and we will forward your e-mail to them.

- Adikari Y., Kikuchi S. Makinow T. and Araya T. (2007): Naturally re-vegetated forest governed by mudflow induced sediment heterogeneity. *New Forest*, 33(1):53-65
- Ali Chavoshian (2007): Hydrological Modeling of Large-scale Ungauged Basin Case Study: Ayeyarwady (Irrawaddy) Basin, Myanmar, IHP publication, No.7, 43-48
- Barker, S., Robarts, R., Yamashiki, Y., Takeuchi, K., Yoshimura, C., and Muguetti, A.C. (2007): UNEP-GEMS/Water Programme-water quality data, GEMStat and open web services-and Japanese cooperation, *Hydrological Processes*, 21(9), 1132-1141
- Fernando, D. A. K. and Jayawardena, A. W. (2007): Use of a supercomputer to advance parameter optimisation using genetic algorithms, *Journal of Hydroinformatics*, Vol 9 No 4, 319–329
- Fukami, K., Yamaguchi, T., Imamura, H., and Tashiro, Y. (2008) : Current status of river discharge observation using non-contact current meter for operational use in Japan, *World Environmental & Water Resources Congress 2008*, Honolulu, May 12-17
- Fukami, K., Fujiwara, N., Ishikawa, M., Kitano, M., Kitamura, T., Shimizu, T., Hironaka, S., Nakamura, S., Goto, T., Nagai, M. and Tomita, S. (2006): Development of an integrated flood runoff analysis system for poorly-gauged basins, *Proceeding of the 7th International Conference on Hydroinformatics (HIC2006)*, vol.4, 2845-2852
- Hapuarachchi, H.A.P., Takeuchi, K., Zhou, M.C., Kiem, A.S. Georgievski, M., Magome, J. and Ishidaira, H. (2008): Investigation of the Mekong River basin hydrology for 1980-2000 using the YHyM, *Hydrological Processes*, 22(9), 1246-1256
- Inomata, H. and Fukami, K. (2008): Restoration of historical hydrological data of Tonle Sap Lake and surrounding areas, *Hydrological Processes*, 22(9), 1337-1350
- Ishidaira, H., Ishikawa, Y., Funada, S. and Takeuchi, K. (2008): Estimating the evolution of vegetation cover and its hydrological impact in the Mekong River basin in the 21st century, *Hydrological Processes*, 22(9), 1395-1405
- Ismail-Zadeh, A. and Takeuchi, K. (2007): Preventive disaster management of extreme natural events, *Natural Hazards*, 42(3), 459-467
- Jayawardena, A. W., Xu, P.C. and Li, W. K. (2008): A method of estimating the noise level in a chaotic time series, *Chaos*, American Institute of Physics (Published online on May 13, 2008), DOI: 10.1063/1.2903757
- Jayawardena, A. W. Muttill, N., and Lee, J.H.W. (2006): Comparative analysis of a data-driven and GIS-based conceptual rainfall-runoff model, *Journal of Hydrologic Engineering*, ASCE, vol 11, no. 1, January 1, 2006, pp 1-11
- Jayawardena, A. W., Xu, P. C., Tsang, F. L., and Li, W. K. (2006) : Determining the structure of a radial basis function network for prediction of nonlinear hydrological time series, *Hydrological Sciences Journal*, vol 51, no. 1, February 2006, pp 21-44
- Jayawardena A. W. (2006): Data driven approaches of real-time flood forecasting, *Proceedings of Asia Oceania Geosciences Society 3rd Annual Meeting, AOGS 2006*, 10-14 July 2006, Singapore (Abstracts in CD ROM; p 182/1202)
- Jayawardena, A. W. (2006): Calibration of VIC model for daily discharge prediction of Mekong River using MOSCEM algorithm, *Proceedings of the 3rd APHW Conference held in Bangkok, Thailand, Oct 16-18, 2006* (Abstract in CD ROM, p 256)
- Kiem, A. S., Ishidaira H., Hapuarachchi, H.A.P., Zhou, M.C., Hirabayashi, Y. and Takeuchi, K. (2008): Future hydroclimatology of the Mekong River basin simulated using the high-resolution Japan Meteorological Agency (JMA) AGCM, *Hydrological Processes*, 22(9), 1382-1394
- Lui, Gilbert C.S., Li, W. K., Leung, Kenneth M. Y., Lee, Joseph H.W., Jayawardena, A. W. (2007) Modelling algal blooms using vector autoregressive model with exogeneous variables and long memory filter, *Ecological modelling*, vol. 200, issue 1-2, January 2007, pp 130-138

- Muttill, N. and Jayawardena, A. W.(2008): Shuffled Complex Evolution model calibrating algorithm: enhancing its robustness and efficiency, *Hydrological Processes*, (Published online on July 10, 2008), DOI: 10.1002/hyp.7082
- Muttill, N, Ying, Tian and Jayawardena A. W. (2006): Comparison of the shuffled complex family of model-calibrating algorithms, *Proceedings of Asia Oceania Geosciences Society 3rd Annual Meeting, AOGS 2006, 10-14 July 2006, Singapore* (Abstracts in CD ROM, p 153/1202)
- Muttill, N and Jayawardena A. W. (2006): Extracting knowledge from parsimonious genetic programming evolved rainfall-runoff models, *Proceedings of Asia Oceania Geosciences Society 3rd Annual Meeting, AOGS 2006, 10-14 July 2006, Singapore* (Abstracts in CD ROM, p 152/1202)
- Shrestha, S., Bastola, S., Babel, M.S., Dulal,K.N., Magome, J., Hapuarachchi, H.A.P., Kazama, F., Ishidaira H. and Takeuchi, K. (2007): The assessment of spatial and temporal transferability of a physically based distributed hydrological model parameters in different physiographic regions of Nepal, *Journal of Hydrology*, 347(1-2), 153-172
- Sivakumar, B., Jayawardena, A. W., and Li, W. K.(2007): Hydrologic complexity and classification: a simple data reconstruction approach, *Hydrological Processes*, 21(20), 2713-2728
- Sugiura,T., Fukami, K., and Inomata, H. (2008) :Development of Integrated Flood Analysis System (IFAS) and its applications, *World Environmental & Water Resources Congress 2008, Honolulu, May 12-17*
- Takeuchi, K. (2008): Studies on the Mekong River Basin-Modelling of Hydrology and Water Resources, *Hydrological Processes*, 22(9), 1243-1245
- Takeuchi, K., Hapuarachchi, H.A.P., Zhou, M.C., Ishidaira, H. and Magome, J. (2007): A BTOP model to extend TOPMODEL for distributed hydrological simulation of large basins, *Hydrological Processes*, 2007
- Wang, G., Zhou, M.C., Takeuchi, K. and Ishidaira, H. (2007): Improved version of BTOPMC model and its application in event-based hydrologic simulations, *Journal of Geographical Sciences*, 17(1), 73-84
- Wu, Y, Chen, J. and Jayawardena, A. W.(2007): Establishing a physically based representation of groundwater re-evaporation parameters in SWAT, In Oxley, L. and Kulasiri, D. (eds) *MODSIM 2007 International Congress on Modelling and Simulation. Modelling and Simulation Society of Australia and New Zealand, December 2007*, pp. 1423-1428. ISBN : 978-0-9758400-4-7. http://www.mssanz.au/modsim07/Papers/DegreeofSite_s44_Basenet_.pdf
- Yorozuya, A., Takeuchi, Y., Shintaku, S., Uno, T. and Yamashita, T. (2008) : Fundamental studies for river-training works, *World Environmental & Water Resources Congress 2008, Honolulu, May 12-17*
- Yoshimura, C., and Takeuchi, K. (2007): Estimation of nutrient processes in the Mekong River Basin using a distributed hydrological model, *J. Japan Soc. Hydrol. And Water Resource.*, 20(6), 493-504
- Yoshitani, J., Takeuchi, K., Fukami, K. and Matsuura, T. (2007): Development of a natural flow hydrological database for PUB studies, "Proceedings of the PUB Kick-off meeting held in Brasilia, 20-22 November 2002", 309, 201-207
- Yoshitani, J. and Ao, T. Q. (2007): Toward the application of the physically based distributed hydrological model BTOPMC to ungauged basins, "Proceedings of the PUB Kick-off meeting held in Brasilia, 20-22 November 2002", 309, 211-220
- Zhang, X., Takeuchi, K. and Chen, J. (2007): Temporal and spatial discretization on quasi-3-D groundwater finite element modeling to avoid spurious oscillation, *Journal of Hydrodynamics, Ser. B*, 19(1), 68-77
- Zhou, M. C., Ishidaira, H. and Takeuchi, K. (2007): Estimation of potential evapotranspiration over the Yellow River basin: reference crop evaporation or Shuttleworth-Wallace, *Hydrological Processes*, 21(14), 1860-1874
- Zhou, M.C., Ishidaira, H. and Takeuchi, K. (2008): Comparative study of potential evapotranspiration and interception evaporation by land cover over Mekong basin, *Hydrological Processes*, 22(9), 1290-1309

~News from ICHARM~

International Flood Initiative (IFI) website has been launched

The official website of the International Flood Initiative (IFI) has been launched by the IFI Secretariat at ICHARM. Please visit at: www.ifi-home.info

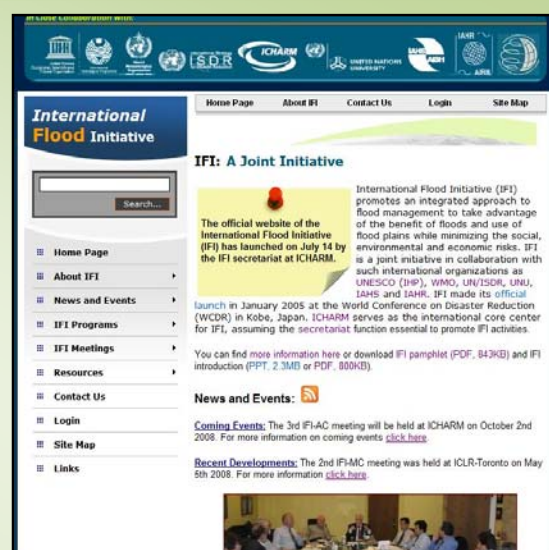
The International Flood Initiative (IFI) is a joint initiative in collaboration with such international organizations engaged in flood management as UNESCO (IHP), WMO, UN/ISDR, UNU, IAHS and IAHR. To coordinate IFI activities, the IFI Secretariat is currently located at ICHARM, Tsukuba, Japan.

The following are some features of the IFI website:

- IFI coming events and recent developments
- IFI resources and publications
- Independent site search function, site map, RSS feed, Links and individual mail service.

Any comments to improve the design and contents of the site are most welcome. Please ask the webmaster of your organization to link to the IFI website.

For more information, please contact Research Specialist Chavoshian at info@ifi-home.info.



IFI Web site

New member!!

Researcher Hideo Yamashita joined ICHARM as a member of the International Technical Exchange Team.

His current research theme is the application of satellite topography data to flood risk assessment.

After graduating from the Department of Global Engineering of Kyoto University (the Undergraduate Course Program of Civil Engineering), he joined the Ministry of Land, Infrastructure, Transport and Tourism in April 2008, and was assigned to ICHARM this June. Besides research work, he is also in charge of the Flood Hazard Mapping training course, which will start at the end of this coming October, and newsletter editing.



Announcement of ICHARM Open Symposium and International Conference:

- On 30th September, ICHARM will hold an open symposium “Local Practices of Integrated Flood Risk Management under Changing Natural and Social Conditions” in Tokyo.
- From 3rd to 6th November, ICHARM will hold a special session in the “the 4th APHW (Asia Pacific Association of Hydrology and Water Resources) Conference” in Beijing, China.

(For more information please see ICHARM website)

Coming Event in ICHARM:

- ✓ 1st October, 2008 the 2nd ICHARM Advisory Board Meeting
- ✓ 2nd October, 2008 the 3rd IFI AC/MC Meeting
- ✓ 3rd -8th October, 2008 GFAS kick-off training course for Global Flood Alert System
- ✓ From 6th October, “2008-2009 Water-related Disaster Management Course of Disaster Management Policy Program”

ABOUT US

The International Centre for Water Hazard and Risk Management (ICARM) is under the auspices of UNESCO in Tsukuba, Japan. The mission of ICHARM is to function as the Centre of Excellence to provide and assist implementation of best practicable strategies to localities, nations, regions, and the globe to manage the risk of water related disasters. ICHARM Newsletter is quarterly and non-commercial publication to develop information networking on water-related disaster. It is distributed via e-mail. They can also be downloaded from our website.

Subscribe/unsubscribe to our mailing list, please contact us.

1-6, Minamihara, Tsukuba, Ibaraki 305-8516 Japan

Tel: +81 29 879 6809 Fax: +81 29 879 6709

Email: icharm@pwri.go.jp

URL: <http://www.icharm.pwri.go.jp>

Copyright (c) 2008 Public Works Research Institute

